What is claimed is:

1. A magnetic disk apparatus including:

a read gate generation unit which generates a read gate signal having a predefined read start time and read end time that are set using a sector pulse as a reference; and

a data demodulation unit which reproduces read data from a medium readout signal by executing a read based on the read gate signal,

the magnetic disk apparatus comprising:

a read gate optimization unit which detects errors of read data demodulated by the data demodulation unit while varying the read start time and the read end time of the read gate signal, the read gate optimization unit determining the read start time and the read end time at which the detected errors are minimized and setting the determined read start and end times in the read gate generation unit.

2. The magnetic disk apparatus according to claim 1, wherein

the read gate optimization unit includes:

a timing adjustment unit which varies the read start time and the read end time of the read gate signal for output to the data demodulation

unit, for each of plural times of executions of test read;

an error detection unit which detects errors of the read data demodulated by the data demodulation unit, for each execution of test read, based on the read gate signal output from the timing adjustment unit; and

an optimum time determination unit which determines as optimum times the read start time and the read end time of the read gate signal at which the errors are minimized of a plurality of errors detected by the error detection unit, the optimum time determination unit setting the determined optimum times in the read gate generation unit.

3. The magnetic disk apparatus according to claim 2, wherein

the timing adjustment unit varies the read start time and the read end time of the read gate signal individually, and wherein

the optimum time determination unit individually determines the read start time and the read end time at which the errors detected by the error detection unit are minimized, for setting in the read gate generation unit.

4. The magnetic disk apparatus according to claim 2, wherein

the timing adjustment unit varies the read start time and the read end time backward and forward around a default value in a predefined time unit.

5. The magnetic disk apparatus according to claim 2, wherein

the timing adjustment unit varies the read start time and the read end time backward and forward around a default value in a read data one byte time unit.

6. The magnetic disk apparatus according to claim 2, wherein

the error detection unit detects as the read data errors Viterbi metric margins of a Viterbi determination unit disposed in the data demodulation unit, and wherein

the optimum time determination unit determines the read start time and the read end time at which the detected Viterbi metric margins are maximized, for setting in the read gate generation unit.

7. The magnetic disk apparatus according to

claim 1, wherein

the error detection unit detects an error rate of the read data demodulated by the data demodulation unit, and wherein

the optimum time determination unit determines the read start time and the read end time at which the detected error rate is minimized, for setting in the read gate generation unit.

8. The magnetic disk apparatus according to claim 1, wherein

the read gate optimization unit is operated at the time of power-on start.

9. The magnetic disk apparatus according to claim 1, wherein

the read gate optimization unit is operated in accordance with a predefined time schedule.

10. The magnetic disk apparatus according to claim 1, wherein

the read gate optimization unit is operated when a change is detected in environmental conditions such as a temperature inside the apparatus.

11. The magnetic disk apparatus according to

claim 1, wherein

when a plurality of readout heads are disposed, the read gate optimization unit is operated on a head-to-head basis.

12. The magnetic disk apparatus according to claim 1, wherein

when the medium is divided into zones, the read gate optimization unit is operated on a zone-to-zone basis.

13. A read gate optimization method for a magnetic disk apparatus including a read gate generation unit which generates a read gate signal having a predefined read start time and read end time that are set using a sector pulse as a reference, and a data demodulation unit which reproduces read data from a medium readout signal by executing a read based on the read gate signal, the method comprising:

a timing adjustment step varying the read start time and the read end time of the read gate signal for output to the data demodulation unit, for each of plural times of executions of test read;

an error detection step detecting errors of the read data d modulated in the data demodulation

unit, for each execution of test read, based on the read gate signal output in the timing adjustment step; and

an optimum time determination step determining as optimum times the read start time and the read end time of the read gate signal at which the errors are minimized of a plurality of errors detected in the error detection step, and setting the determined optimum times in the read gate generation unit.

14. The read gate optimization method for a magnetic disk apparatus according to claim 13, wherein

the timing adjustment step includes varying individually the read start time and the read end time of the read gate signal.

15. The read gate optimization method for a magnetic disk apparatus according to claim 13, wherein

the timing adjustment step includes varying the read start time and the read end time backward and forward around a default value in a predefined time unit.

16. The read gate optimization method for a

magnetic disk apparatus according to claim 13, wherein

the timing adjustment step includes varying the read start time and the read end time backward and forward around a default value in a read data one byte time unit, for detection of errors.

17. The read gate optimization method for a magnetic disk apparatus according to claim 13, wherein

the error detection step includes detecting as the read data errors Viterbi metric margins of a Viterbi determination unit disposed in the data demodulation unit, and wherein

the optimum time determination step includes determining the read start time and the read end time at which the detected Viterbi metric margins are maximized, and setting the determined times in the read gate generation unit.

18. The read gate optimization method for a magnetic disk apparatus according to claim 13, wherein

the error detection step includes detecting an error rate of the read data demodulated by the data demodulation unit, and wherein

the optimum time determination step

includes determining the read start time and the read end time at which the detected error rate is minimized are determined, and setting the determined times in the read gate generation unit.

19. A program operable to cause a computer to execute:

the computer being incorporated in a magnetic disk apparatus including a read gate generation unit which generates a read gate signal having a predefined read start time and read end time that are set using a sector pulse as a reference, and a data demodulation unit which reproduces read data from a medium readout signal by executing a read based on the read gate signal,

a timing adjustment step varying the read start time and the read end time of the read gate signal for output to the data demodulation unit, for each of plural times of executions of test read;

an error detection step detecting errors of the read data demodulated in the data demodulation unit, for each execution of test read, based on the read gate signal output in the timing adjustment step; and

an optimum time determination step determining as optimum times the read start time

and the read end time of the read gate signal at which the errors are minimized of a plurality of errors detected in the error detection step, and setting the determined optimum times in the read gate generation unit.